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Information systems strategies in national organisations and the identification, legal protection and management of the most important sites in England

Nigel Clubb & Bill Startin

(Royal Commission on the Historical Monuments of England and English Heritage)

10.1. Introduction

This paper consists of three main sections. Firstly, it outlines some of the work English Heritage undertook in 1991/2 to improve its overall strategy for information systems, focusing on the concept of the "heritage management data set." Secondly, it will describe the preliminary strategy developed earlier during 1987/8 which lies behind the use and creation of archaeological records in the context of the work of the English Heritage Monuments Protection Programme (MPP) and consider how well this preliminary work anticipated the full English Heritage strategy. Finally, the paper gives preliminary notice of the work initiated in 1993 by the Department of National Heritage on the case for a corporate approach to certain aspects of heritage information systems on a tripartite basis involving the Department itself, the Royal Commission on the Historical Monuments of England (RCHME) and English Heritage.

10.2. Context

In England, the Department of National Heritage, English Heritage, RCHME and local authorities through their Sites and Monuments Records (SMRs) all have requirements to compile, manage and exploit information relating to archaeological and architectural monuments and buildings. These requirements match the respective responsibilities of the organisations concerned. Responsibility for statutory control of the archaeological and architectural environment through the scheduling and listing processes is shared between the Department of National Heritage and English Heritage. English Heritage acts as the statutory adviser to the Department which takes the decision to schedule monuments or list historic buildings. English Heritage also has operational responsibilities concerned with monuments and buildings, (see section 10.5.2 below). RCHME has a different, but complementary, set of statutory functions as the national body of survey and record for historic monuments and buildings. Specific functions relate to compilation, curation and provision of access to the National Monuments Record and its associated archive. The role of local authorities in the context of local planning processes and listed buildings consents and the local SMR system which supports them is well documented elsewhere (including Burrow (ed.) 1985 and Lang 1990). The responsibility for co-ordinating national and local heritage records lies with RCHME which has a lead role for this purpose (see RCHME 1993b). Both English Heritage and RCHME are "sponsored", and mainly funded, by Government through the Department of National Heritage.

10.3. The trend towards strategic information studies

10.3.1. English Heritage and RCHME

Both English Heritage and RCHME have undertaken strategic studies on information systems in recent years, usually on the basis of work facilitated by external consultants. English Heritage commissioned a number of studies from consultants, DWH Associates, during 1986/9 on the development of text and computer-based mapping systems to support the scheduling process for monuments. These studies are documented elsewhere (Clubb 1988 and 1990) and are also referred to in section 10.7. These were followed by a corporate study in 1991 by consultants, Savant Enterprises Ltd, which is summarised later in this paper (section 10.4). More recently, in 1992, consultants Coopers & Lybrand reported on the need for geographical information systems to support the computer-based mapping of the locations of historic buildings. RCHME has also been active in initiating strategic information systems studies, most notably the study by Oracle UK in 1990 which recommended that most of the existing RCHME databases be migrated to a new unified National Monuments Record system. The detailed design for this system was undertaken by consultants SPS in 1991/2 and the system is being implemented in 1993. RCHME has recently commissioned a follow-up report on the requirements for systems to support geographical and spatial information (consultants: CSL/Geobase). RCHME is currently (April 1993) engaged in the development of a software package for use by SMRs based on the models inherent in the National Monuments Record system. There has been co-operation between RCHME, English Heritage and local authorities in the areas of controlled vocabulary (RCHME and English Heritage 1989 and RCHME and English Heritage 1992) and data standards (RCHME 1993a and RCHME and English Heritage 1993).

10.3.2. The role of the new Department of National Heritage

The studies carried out by English Heritage and RCHME attempted to deal with the requirements of other bodies, including each other and SMRs. A significant new development has coincided with the transfer of heritage sponsorship responsibilities from the Department of the Environment to the new Department of National Heritage. In particular, the new Department is showing greater interest in articulating its own requirements for information systems relating to archaeology and architecture and, by implication, co-ordinating aspects of the information strat-

egies of its sponsored heritage bodies. This development is dealt with in more detail in section 10.8.

10.4. The evolving English Heritage information systems strategy

10.4.1. The starting point

It is frequently the case that information systems develop in relative isolation within organisations, or, more commonly, parts of organisations, to satisfy the limited interests of specific groups of people. There may be an interest in serving and describing restricted "spheres of influence" rather than on more outward looking attempts to integrate systems development with the needs of related departments or organisations. Archaeological records in England now show some of the limitations of such restricted approaches (see also RCHME 1993b). Accordingly, it was considered useful to include in this paper some reference to the way English Heritage has attempted to develop an overall strategy for its information systems with the aid of its consultants, Savant Enterprises Ltd. In this process, two key concepts can be identified, the "heritage data set" and the "heritage object". The starting point for the development of the strategy is a consideration of the role of English Heritage. This can be summarised as follows:

> "To bring about the long-term conservation and widespread understanding and enjoyment of the historic environment for the benefit of present and future generations, using expert advice, education, example, persuasion, intervention and financial support".

Information is a key corporate resource within the organisation and, as with other resources, such as finance, staff and property, it must be managed effectively to help achieve the objectives of the organisation. In order to develop the information systems strategy throughout English Heritage, the review had five main stages:

- an analysis of the information needed to meet the organisation's corporate objectives
- the identification and prioritisation of strategic information systems based on the analysis of needs
- the identification of the information technology required to support the information systems
- the development of a plan of action to implement the recommendations
- the identification of the resource and management implications of implementing the plan

10.4.2. Business areas

The first stage of the review involved the identification of the various business areas (i.e. groups of related activities), cycles of activity and information sources involved in the work of English Heritage overall.

The main business areas of English Heritage were identified as follows:

- Corporate planning
- Resource management
- Operational planning
- Heritage management data set
- Operational activities management
- Marketing/promotion
- Management systems

10.4.3. Heritage data and the heritage object

For the purposes of this paper, the key recognition is that of the "heritage management data set" as one of the seven main business areas of English Heritage and as an essential part of the cycle of activities concerned with the management of the heritage. This explicit recognition is important, since the role of the organisation itself is often described only in terms of its conservation management activities. Other organisations, chiefly RCHME and the SMRs, are normally seen as the main providers of archaeological information. This recognition of an English Heritage business area for heritage management information does not in any way conflict with the activities of those other organisations, rather it reflects the reality that English Heritage is itself engaged in activities such as observing and analysing the heritage. It does so in the context of the scheduling and listing processes as well as compiling management information applied for purposes of management conservation.

Further work on the definition of what was meant by the "heritage data set" has lead to the identification of the "heritage object" concept which had also emerged from the RCHME strategic study by Oracle (see section 10.2). The concept helps to identify the complicated range of objects we may seek to record, or conversely, which we have often not systematically recorded, including monuments, legally protected monuments, historic buildings, artefacts, ecofacts, World Heritage Sites, conservation areas, historic gardens and historic landscapes (Fig. 10.1). Most archaeological records in England are restricted to "monuments", taken here in its broadest sense to include all archaeological sites, plus those sites thought to be represented by artefacts and those selected "historic" buildings thought to be archaeological. Until very recently, with pilot work on Urban Archaeological databases (see RCHME and English Heritage 1993), no record in England had set out to document fully the complexities of major historic towns and the recording of historic landscapes has yet to be tackled.

The English Heritage records described below are concerned largely with scheduled monuments, that is those monuments which have been given legal protection and for which a protected area has been defined. However, all of these "objects" are part of the wider "heritage" and there is provision for "core" data, a minimum amount of information, such as location, type and extent, which must be held for all of them (see also RCHME 1993a).

10.4.4. Internal and external data flows

A further point to emphasise is that the analysis of information system flows identifies the clear need for flows, both internally, to and from other business areas within English Heritage, and externally, to and from other records held by other organisations. Effective data exchange is identified as a crucial activity. Information is exchanged with RCHME as the national record. Data is also exchanged with the Department of National Heritage in the context of heritage

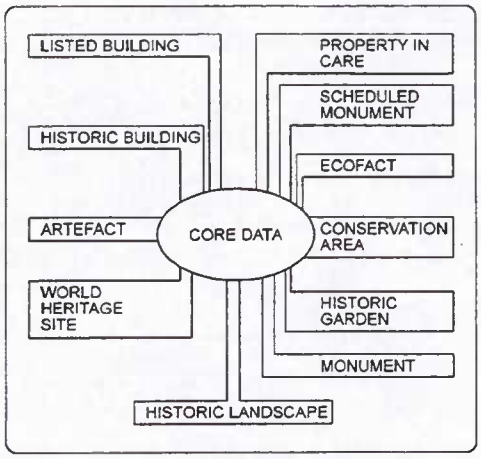

Figure 10.1: English Heritage "core" data (source: Savant).

recommendations and local authorities in the context of planning requests and other proposals and advice. Property owners and the general public also contribute to the information flows.

These other business areas and external organisations are, of course, the "users" who define the "user requirement" for English Heritage records. Similarly, requirements of English Heritage from the records of other business areas and organisations can also be specified. This observation leads to the next section of this paper, the philosophy behind the use and creation of archaeological records in the context of the work of English Heritage or, more briefly, the issue of the "user requirement".

10.5. The philosophy behind the use and creation of archaeological records in the context of the work of English Heritage

10.5.1. Core data

The generalities of "core data" required within computerised archaeological records can be fairly easily specified. We need to know what a particular archaeological site is and where it is. Parts of the description (e.g. site type) are normally recorded in glossary controlled fields (see RCHME 1993a, RCHME and English Heritage 1989 and RCHME and English Heritage 1992). Since archaeological data can be difficult to interpret, we also often need to know why the site has been so classified and this justification needs to be contained, where necessary, in the free-text description. Beyond this, we are interested in a basic description of the physical feature, which may help to identify variation within the overall monument class. In addition, we would expect to record sources of information and various administrative details. These requirements can be summarised as follows:

- Location/identification:
- Site name, map reference, administrative areas
- Description:
- Site type, period, free-text description
- Reference:
- Archaeological history, visits, sources, date of compilation of record
- Administration:
- Record number, cross reference, status of site/area

This might represent the basic user requirement of an academic record, especially if the record also contained topographical information such as geology and soil type, height above sea level *etc.* Any attempt to record more for academic purposes runs into the problems of agreed interpretations and the need to return to the source data. Any organisation concerned with managing the archaeological resource would need to go beyond this "core".

10.5.2. The heritage management functions

For the purposes of the English Heritage information systems strategy review, the main heritage management functions hare grouped under two business area; managing the heritage management data set and operational activities management.

The Heritage Data Management business area is defined as follows:

- To observe and recognise the heritage
- To record the heritage
- To analyse the heritage resource
- To define priorities for action
- To convince and confirm action with others

Clearly other bodies, including the Department of National Heritage, RCHME and local authorities have their own perspective on these activities and there are complex relationships between them in terms of information flow (see section 10.9 below).

The Operational Management business area is defined as follows:

- To advise/intervene
- To provide grant/acquire/dispose of
- To manage/monitor
- To record before destruction

With reference to these functions, four principal additional English Heritage requirements can be established:

a) Firstly, English Heritage is concerned with establishing which sites are of "national importance". Indeed, as with others involved in cultural resource management, it is concerned with priority judgements in general. Accordingly, our user requirement is for records which contain information on the criteria which are considered when making these judgements. We believe the relevant criteria to be: period, rarity, survival, group value, potential, diversity, documentation, amenity value, (for a more complete explanation see Darvill et al 1987).

b) Secondly, we need to know something of the circumstances of sites in terms of their care and management, in order to plan and assess future action. The user requirement therefore includes the recording of: condition, fragility, vulnerability, conservation value.

c) Thirdly, we need to define the extent of areas which are legally protected.

d) Finally, we need to hold records in a form which can be readily transmitted to our users, whether they are other bodies using archaeological information or those non-archaeological bodies we must notify concerning legally protected sites. Under this last heading we have had to draw a distinction between "archaeological items" and "scheduled monuments", that is between individual monuments (archaeological items) and those sites in England which are legally protected and may contain several individual archaeological items. This is because most archaeological records in England are compiled in terms of individual items and data exchange with bodies such as RCHME and local authorities must be on this basis.

This user requirement has been developed in the context of a specific project, the Monuments Protection Programme (MPP), which English Heritage is currently undertaking to review the protection offered to archaeological sites. It is a requirement which also helps to describe the demands we wish to make on other records (see also Startin 1992).

10.6. The MPP records created by English Heritage

The guidelines for the records being created by English Heritage as part of the MPP now conform to the above user requirement. This has lead to the creation of a computer-based record of scheduled monuments (RSM) which includes the fields of data given in Table 10.1 below:

The content of the fields is covered by a detailed manual for MPP staff. The form of the record has also been one of the sources for the joint data standard for archaeological records agreed between RCHME and the Association of County Archaeological Officers with support from English Heritage (RCHME 1993a).

10.7. Information systems already supporting the MPP and the strategic model

The English Heritage RSM created in the course of MPP is supported by three main elements:

- a computer-based text record: a relational database applying Oracle software using the Ultrix operating system
- a computer-based map record: a combination of a raster map base and vector overlays showing protected areas, run on Sun hardware and Advent software using the Sun version of UNIX as the operating system
- paper records relating to legal protection and other background information

The textual RSM system and the computer-based mapping system are well documented elsewhere (see Clubb 1988 and 1990). Over a period of time from 1987, computer systems have been implemented and are in place already. The English Heritage information systems strategic review discussed above (section 10.4) looks to the future implementation of

Location and identification:
scheduled monument title
archaeological item title(s)
scheduled monument grid reference
archaeological monument grid reference(s)
parish/district/county
height OD
Descriptive:
scheduled monument title
scheduled monument description
confirmation of boundary of protected area
scheduled monument assessment of importance
archaeological item title
archaeological item description
archaeological item assessment of importance
monument class
period
components
history of events
sources
Management:
scheduled monument management statement
area of protected site
other designations on site
other designations around site
current land-use
form
condition
stability
vulnerability
Administration:
file reference
administrative history (several fields)
owner(s)
occupiers(s)
other interested parties
record compilation date

Table 10.1: The computer-based Record of Scheduled Monument (RSM).

information systems, probably in accordance with some el ement of co-ordination of the heritage information systems managed by English Heritage, the Department of National Heritage and RCHME. In the course of time, a major exercise will be to plan the migration from these existing systems to an integrated heritage data set within English Heritage and providing proper management of the information flows between the Department, English Heritage and RCHME.

In terms of anticipating the information systems strategy developed by Savant in 1991, the model for the RSM system caters for the three related "sub-records" that is:

- archaeological items
- legal monuments
- area/s of land under legal constraint (constraint area).

These three types of record do not have a one to one relationship and have different attributes attached to them, for example, the archaeological record is concerned with references and events, the legal record with statutory history and status and the constraint area record with location, ownership and management. Further validation of the MPP/ RSM approach is the attempt to integrate the record with the associated management and administrative processes. Strategically, the RSM system is surrounded by functions which either draw on the record or update it. Both the RSM architecture, and the Savant study, provide for the automation of administrative processes as within "workflow" systems. The RSM computer systems are not just data-bases which are an additional management overhead, but can be justified in terms of increased efficiency. The RSM model developed during the period 1986/9 thus seems to anticipate the Savant model. As the corporate information systems strategy proceeds, all English Heritage information systems will be subject to change and review. However, those systems which support the MPP specifically should be able to face the future with some confidence since the existing models support operations reasonably well and the form of the data will provide a key part of the proposed heritage data set. The Savant strategy points the way to more integrated systems, for example, combining records of scheduled monuments with other forms of legal protection, such as listed historic buildings, historic gardens and conservation areas. This integrated environment should provided for reconciliation links between systems which identify the heritage and those which manage it. There will also be the potential to introduce closer links between records of heritage items which have statutory protection and those which do not, especially through interfaces with the record systems of RCHME and local authorities.

10.8. The new concept of the proposed National Heritage Database

The strategic initiatives carried out over the last few years within English Heritage and RCHME, together with the analysis of the RCHME lead role for the co-ordination of local SMRs, has resulted in the construction of more sophisticated models for the relationships between national and local heritage record systems (for the concept of the extended national record see RCHME 1993b). The studies carried out by English Heritage and RCHME attempted to deal with the requirements of other bodies, including each other and SMRs. As mentioned above, a significant new development has coincided with the transfer of heritage sponsorship responsibilities from the Department of the Environment to the new Department of National Heritage. In particular, the new Department is showing greater interest in articulating its own requirements for information systems relating to archaeology and architecture and, by implication, co-ordinating aspects of the information strategies of its sponsored heritage bodies. The situation changed following a report in 1992 by the Audit Office which commented on the lack of computerisation of the lists of the 500,000 or so listed historic buildings in England (National Audit Office 1992). The new Department of National Heritage decided to act on an earlier internal Information Systems Planning Framework report within the Heritage Division, then still part of the Department of the Environment, which recommended that a feasibility study was needed to determine the requirement for a National Heritage Database. In 1993, the Department of National Heritage commissioned consultants Ernst & Young to carry out a feasibility study into the National Heritage Database. The feasibility study is due to be considered by the Department of National Heritage in the second quarter of 1993. Its findings will be subject to discussions between the three bodies, Department of National Heritage, English Heritage and RCHME. Subject to financial approvals and following the production of a detailed Operational Requirement, it is hoped that work on the computerisation of the lists of historic buildings as the first element of the National Heritage Database will commence in the first half of 1994. It is premature to anticipate the outcome of the feasibility study and the subsequent consultations. For the purpose of this paper, two aspects of the project only are provisionally outlined, the main option put forward by Ernst & Young to support the information systems required and the management arrangements proposed.

10.9. The proposed new National Heritage Data-base — Linking of modules and proposed management arrangements

The main option put forward by Ernst & Young (Fig. 10.2) is for two main computer platforms. One platform supports the new heritage database and maintains the record of statutory constraints such as listed buildings and scheduled monuments. This platform is linked closely to the systems which support the process of listing and scheduling on the one hand, (including the scheduled monument record (RSM) which forms the main subject of this paper), and the case management systems of the Department of National Heritage and English Heritage on the other.

In parallel with the new data-base is the RCHME National Monuments Record system, already in place, which, under the proposals of the study, is set to contain a mirror image of the publicly-accessible sections of the heritage database (in effect, a record of statutory constraints) as a sub-set of the total national record. Links to the local au-

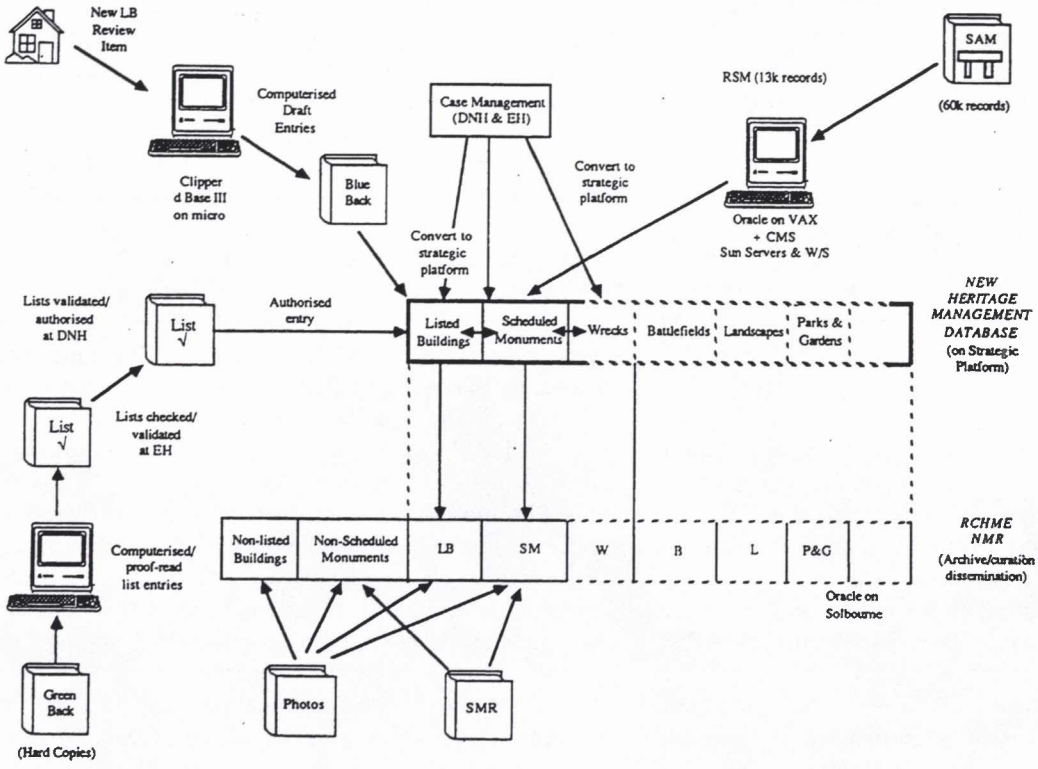

Figure 10.2: Heritage database — proposed platform (source: Ernst e& Young).

thority Sites and Monuments Records are provided through the "extended" National Monuments Record (see also RCHME 1993b). The proposed arrangements for managing the project are set out in Fig. 10.3. The Project Board has representatives from the three organisations, the Department of National Heritage has a Project Coordinator and English Heritage and RCHME both have Project Managers.

10.10. Conclusion

It is not the purpose of this article to comment at this early stage on the Heritage database proposals put forward to the Department of National Heritage. There will be great interest, however, in the attempt to construct what is in effect an information systems strategy for aspects of the work of three organisations and to see how the proposals, if implemented, work out in detail, given the problems to be solved in co-ordinating the information systems strategies of organisations which may have different priorities and different cycles for budgeting and planning. The main conclusion to be drawn from the several issues considered in this paper is that a great deal of relevant strategic analysis had already been carried out prior to the Department of National Heritage study. English Heritage had addressed the requirements of information systems for scheduling purposes through the MPP and has carried out some analysis of the listing process for historic buildings. RCHME had already carried out the analysis of the system for the National Monuments Record and the relationship between the national record and local authority Sites and Monuments Records. If the new study succeeds in bringing into the analysis the requirements of the relevant government department and introduces successful management arrangements co-ordinating all levels of heritage record, then much will have been achieved.

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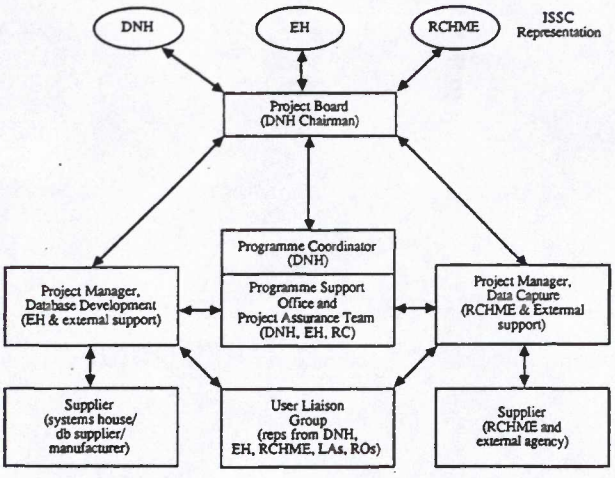

Figure 10.3: Heritage database — proposed management (source: Ernst & Young).

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N. D. Clubb,
Royal Commission on the Historical Monuments of England,
National Monuments Record Centre,
Kemble Drive
Swindon GB-SN2 2GZ

D. W. A. Startin,
English Heritage,
Fortreess House,
23, Savile Row,
GB-W1X 1AB London